



PATENT ATTORNEY DOCKET NO. 00786/450005

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Alma Woodberry

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:

Becerra et al.

Art Unit:

3737

Serial No.:

09/822,585

Examiner:

S. J. Shaw

Filed:

March 30, 2001

Customer No.:

21559

Title:

METHOD AND APPARATUS FOR OBJECTIVELY MEASURING

PAIN, PAIN TREATMENT AND OTHER RELATED TECHNIQUES

Mail Stop Amendment Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Applicants submit the references listed on the enclosed Form PTO-1449.

Submission of this statement is not a representation that a search has been made, nor is the inclusion of information in this statement an admission that the information is material to patentability.

Under 35 U.S.C. § 120, this application relies on the earlier filing date of application serial number 09/729,665, which was filed on December 4, 2000. The references listed on the enclosed Form PTO-1449 were submitted to and/or cited by the

Office in the prior application and, therefore, copies of these references are not provided for this application.

This statement is being filed after a first Office Action on the merits, but before the mailing of a final Office Action or a Notice of Allowance. A check for \$180.00 in payment of the late submission fee set forth in 37 C.F.R. § 1.17(p) is enclosed.

If there are any charges or any credits, please apply them to Deposit Account No. 03-2095.

Respectfully submitted,

Date: 29 Opely 2004

karen L. Elbing, Ph.D.

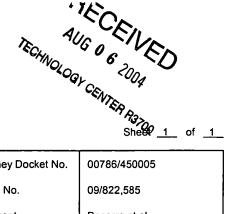
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Clark & Elbing LLP 101 Federal Street

Boston, MA 02110 Telephone: 617-428-0200

Facsimile: 617-428-7045





SUBSTITUTE (MODIFIED)	FORM PTO-1449		TMENT OF COI		Attorney D Serial No.	ocket No.	00786/45		
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Examiner's Initials	Patent Number	Issue Date	F	Patentee		Class	Subclass	Filing Date (If Appropriate)	
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	6,298,258	10/2/01	Heid et al.					_	
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references which were previously cited by or mitted to the Patent Office in parent Pursuant to 37 C.F.R. §1.98(d) copies of Pursuant to 37 C.F.R. §1.98(d) copies of the references which were proposed. Application No. 09/729,665, filed December 4,2000, are not enclosed. Page 1 of 15 Form PTO-1449 ATTY. DOCKET NO. U.S. DEPARTMENT OF COMMERCE APPLICATION NO. (Rev. 8-83) PATENT AND TRADEMARK OFFICE MGH-004BUS 09/822,585 FORMATION DISCLOSURE CITATION PECEIVED Lino R. Becerra
Lino R. Becerra
FILING DATE
March 30, 2001

U.S. BASENT DOCUMENTS **APPLICANT** Lino R. Becerra et al. (Use several sheets if necessary) **GROUP EXAMINER** FILING DATE IF INITIAL DOCUMENT NUMBER DATE NAME **CLASS** SUBCLASS APPROPRIATE* 5 6 6 2 2 9/2/97 Heid FOREIGN PATENT DOCUMENTS TRANSLATION DOCUMENT NUMBER DATE COUNTRY **CLASS SUBCLASS** YES NO * WO 97 33515 A 9/18/97 **PCT** OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, Etc.) Adolphs, R., Tranel, D., Damasio, H., and Damasio, A. (1994). Impaired recognition of emotion in facial expressions following bilateral damage to the human amygdala. Nature 372, 669-672. Adolphs, R., Tranel, D., Damasio, H., and Damasio, A. (1995). Fear and the human amygdala. J. Neurosci. Sept. 15, 5879-5891. Aggleton, J.P., Burton, M.J., and Passingham, R.E. (1980). Cortical and subcortical afferents to the amygdala in the rhesus monkey (Macaca mulatta). Brain Res. 190, 347-368. Adler, L.J., Gyulai, F.E., Diehl, D.I., Mintun, M.A., Winter, P.M., and Firestone, L.L (1997). Regional brain activity changes associated with fentanyl analgesia elucidated by positron emission tomography. Anesth, Analg. 84, 120-126. Aguirre GK, Zarahm E, D'Esposito M. A critique of the use of the Kolmogorov-Smimov (KS) statistic for the analysis of BOLD fMRI data. Magn Reson Med. 1998 Mar;39(3):500-5. Albanese A, Minciacchi D. Organization of the ascending projections from the ventral tegmental area: a multiple fluorescent retrograde tracer study in the rat. J Comp Neurol. 1983 June I; 2 1 6(4):406-20. Altier N, Stewart J. Dopamine receptor antagonists in the nucleus accumbens attenuate analgesia induced by ventral tegmental area substance P or morphine and by nucleus accumbens amphetamine. J Pharmacol Exp Ther. 1998 Apr;285(1):208-15. Amaral, D.G., and Price, J.L. (1984). Amydgalo-cortical projections in the monkey (Macaca fascicularis). J. Comp. Neurol. 230, 465-496. Amorapanth P, LeDoux JE, Nader K. Different lateral amygdala outputs mediate reactions and actions elicited bya fear-arousing stimulus. Nat Neurosci. 2000 Jan;3(1):74-9. * Apkarian A V, Darbar A, Krauss BR, Gelnar PA, Szeverenyi NM. Related Articles Differentiating cortical areas related to pain perception from stimulus identification: temporal analysis of fMRI activity. J Neurophysiol. 1999 Jun;81(6):2956-63. * Arvanitogiannis, A., Waraczynski, M., and Shizgal, P. (1996). Effects of excitotoxic lesions of the basal forebrain on MFB self-stimulation. Physiology and Behavior 59(4/5), 795-806. Bain, G. T., and Kornetsky, C. (1987). Naloxone attenuation of the effect of cocaine on rewarding brain stimulation. Life Sciences 40. 1119-1125 Ballantine HT Jr, Cassidy WL, Flanagan NB, Marino R Jr. Stereotaxic anterior cinquiotomy for neuropsychiatric illness and intractable pain. J Neurosurg. 1967 May;26(5):488-95. * Bandettini, P.A., Wong, E.C., Hinks, R.S., Tikofsky, R.S., and Hyde, J.S. (1992). Time course EPI of human brain function during task activation, Mag. Res. Med. 25, 390-397.

Barasi S. Responses of substantia nigra neurones to noxious stimulation. Brain Res. 1979 Jul 27;171(1):121-30.

Examiner

Date

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTY. DOCKET NO. MGH-004AUS

APPLICATION NO. 09/729,665

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Hans C. Breiter et al.

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APPLICANT

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December 4, 2000

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		U.S.	PATENT DO	CUMENTS						
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE I			
		OTHER DOCUMENTS (including Autho	r, Title, Date, Pertinent Page	s, Etc.)	4				
	*	Barch, D.M., Braver, T.S., Nystrom, L.E., Forr difficulty in human prefrontal cortex. Neuropsy	nan, S.D., Noll, ychologia 35, 13	D.C., and Cohen, J.D. (19 373-1380.	97). Dissociat	ing working men	nory from task			
	*	Basbaum AI, Fields HL.Endogenous pain con	trol mechanism	s: review and hypothesis.	Ann Neurol, 1	978 Nov;4(5):45	1-62.			
	*	Baune A, Sommer FT, Erb M, Wildgruber °, K Neuroimage. 1999 May;9(5):477-89.	ardatzki B, Palr	n a, Grodd W. Dynamical o	luster analysi	is of cortical fMR	l activation.			
	*	Baxter, L.R., Schwartz, J.M., Phelps, M.E., Ma prefrontal cortex glucose metabolism common	azziotta, J.C., G	uze, B.H., Selin, C.E., Gerr of depression. Arch Gen P	ner, R.H., and sychiatry 46,	Sumida, R.M. (* 243-250.	1989). Reduction of			
	*	Becerra L, Breiter H, Jenkins L, aonzalez a, B	orsook D. Early	Activation of Reward/Aver	sive Circuitry		s Thermal Stimuli			
	Becerra, L.R., Breiter, H.C., Stojanovic, M., Fishman, S., Edwards, A., Comite, A.R., Oonzalez, R.G., and Borsook, D. (1999). Hubrain activation under controlled thermal stimulation and habituation to noxious heat: an fMRI study. Magnetic Res. in Medicine 4 1044-1057.									
	*	Bechara, A., Damasio, H., Tranel, D., and Damasio, A.R. (1998). Dissociation of working memory from decision making within the huma prefrontal cortex. J. Neurosci. 18, 428-437.								
	*									
	*									
	*	Bench, C.J., Friston, K.J., Brown, R.G., Frackowiak, R.S.J., and Dolan, R.J. (1993). Regional cerebral blood flow in depression measure by positron emission tomography: The relationship with clinical dimensions. Psych. Med. 23, 579-590.								
	*	Bench, C.J., Friston, K.J., Brown, R.G., Scott, I abnormalities of cerebral blood flow in major de	C., Frackowia epression. Psyc	k, R.S.J., & Dolan, R.J. (19 ch. Med. 22, 607-615.	992). The ana	atomy of melancl	nolia -focal			
	*	Bennett, A.J., and Mayer, D.J. (1979). Inhibition the periaqueductal central gray matter. Brain R	n of spinal cord es. 172(2), 243	interneurons by narcotic m -257.	nicroinjection	and focal electric	cal stimulation in			
	*	Berkowitz, B.A Cerreta. K. V., and Spector. S. (1974). The influence of physiologic and phannacologic factors on the disposition of morphine as determined by radioimmunoassay. J Phannacol Exp Ther. 191(3), 527-534.								
	*	Berns, G.S., Cohen, J.D., & Mintun, M.A. (1997). Brain regions responsive to novelty in the absence of awareness. Science 276, 1272-1275.								
	*	Bester, H. et al., "The Spino(trigemino) Pontoar J. Neurophysiol. 1995 Feb; 73(2): 568-585.	mygdaloid Path	way: Electrophysiological 6	Evidence for A	An Involvement i	n Pain Processes.			
	*	Blackbum, J., Pfaus, J., & Phillips, A. (1992). D	opamine function	ons in appetitive and defen	sive behavior	rs. Prog. Neurob	iol. 3, 247-279.			
	*	Blair et al., Dissociable neural responses to fac	ial expressions	of sadness and anger Bra	in (1999) 122	, 883-893				
	*	Bernard JF, Huang oF, Besson JM. Nucleus ce an involvement in pain processes. J Neurophys	ntralis of the an	nygdala and the globus pa		'	ogical evidence fo			
	*	Blackburn, J., Phillips, A., Jakubovic, A., and Fil following consumption of a nutritive meal but no 25, 1095-1100.	biger, H. (1986) It a palatable no	. Increased dopamine met on-nutritive saccharine solu	abolism in the	e nucleus accum cology Biochem	bens and striatun istry and Behavior			
		Date	Examiner							

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

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APPLICATION NO.

INFORMATION DISCLOSURE CITATION

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APPLICANT

Hans C. Breiter et d. GROUP.

December 4, 2000

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'	December 4, 2000	2002 1/EAD
OTHER DOCUMENTS (including Author, Title, Date	e, Pertinent Pages, Etc.)	2802 1/EA ASTOO
Blackburn, J., Phillips, A., Jakubovic, A., and Fibiger, H. (1989). Dopami Behavioral Neuroscience 103(1), 15-23.	ine and preparatory behavior: II. a	neurochemical analysis.
Borod, 1.C., Koff, E., Perlman-Lorch, M., and Nicholas, M. (1986). The epatients. Neuropsychologia 24(2), 169-180.	expression and perception of facial	al emotion in brain-damaged
Borod, J.C., Koff, E., Perlman-Lorch, M., and Nicholas, M. (1985). Chandamage. Arch. Neurology 42, 345-348.	nels of emotional expression in p	atients with unilateral brain
Botvinick M, Nystrom LE, Fissell K, Carter CS, Cohen JD. Conflict monit Nature. 1999 Nov 11 ;402(6758): 179-8I.	oring versus selection- for-action	in anterior cingulate cortex.
Boynton et al., Linear sysems analysis of functional magnetic resonance 1996, 16(13): 4207-4221	e imaging in human V1, The journ	al of neuroscience, July 1,
Bozarth MA, Wise RA. Involvement of the ventral tegmental dopamine s Res Monogr. 1986;67:190-6.	system in opioid and psychomotor	stimulant reinforcement. NID
Braver, T.S., Cohen, J.D., Nystrom, L.E., Jonides, J., Smith, E.E., and Ninvolvement in human working memory. Neuroimage 5(1), 49-62.	oll, D.C. (1997). A parametric stu	dy of prefrontal cortex
Breiter HC, BecelTa L, Gonzalez RO, Huffman, EK, Harter K, lenkins L, human brain. (submitted to Neuron). (unpublished)	Comite A, Borsook D. Morphine	activates reward circuitry in th
Breiter HC, EtcoffNL, Whalen PJ, Kennedy W A, Rauch SL, Buckner RL of the human amygdala during visual processing of facial expression. No	., Strauss MM, Hyman SE, Roser euron. 1996 Nov;17(5):875-87 .	BR. Response and habituat
Breiter, H.C., and Rosen, B.R. (1999). Functional magnetic resonance in 877, 523-547.	maging of brain reward circuitry in	the human. N.Y. Acad. Sci.
Stern, C.E., Belliveau, I. W., Baer, L., O'Sullivan, R.L., Savage, C.R., len	nike, M.A., and Rosen, B.R. (1996	Sa). Functional magnetic
Brock, J.W., Ng, J.P., and Justice, J.B. Jr. (1990). Effect of chronic coca determined by microdialysis perfusion with NSD1015. Neurosci. Lett. 11	ine on dopamine synthesis in the 7, 234-239.	nucleus accumbens as
Buckner, R.L., Petersen SoB., Ojemann, J.C., Miezin, F.M, Squire, LR., explicit and implicit memory retrieval (aSks. I. Neurosci. 15, 12-29.	and Raichle, M.E., (1995). Funct	ional anatomical studies of
Bushnell MC, Duncan GH, Hofuauer RK, Ha B, Chen JI, CalTier B. Pain Proc Natl Acad Sci U S A. 1999 Jul6;96(14):7705-9.	perception: is there a role for pr	mary somatosensory cortex?
Cabanac, M. (1971). Physiological role of pleasure. Science 173(2), 110	03-1107.	
Cabib S, Puglisi-Allegra S. Opposite responses ofmesolimbic dopamine J Neurosci. 1994 May;14(5 Pt 2):3333-40.	system to controllable and unco	ntrollable aversive experience
Cadoni, C., Solinas, M., Chiara, G. (2000). Psychostimulant sensitization J. Pharmacol. 388(1), 69-76.	n: differential changes in accumb	al shell and core dopamine. E
Cador, M., Robbins, T.W., and Everitt, B.J. (1989). Involvement of the arventral striatum. J. Neurosci. 30, 77-86.	mygdala in stimulus-reward asso	ciations: interaction with the
Cahill, L., Haier, R.J., Fallon, J., Alkire, M.T., Tang, C., Keator, D., Wu, I. elated with long-tenn, free recall of emotional infonnation. Proceedings I	., and McGaugh, J.L. (1996). Am Nat. Acad. Sci. U.S.A. 93,8016-8	ygdala activity at encoding co 021.
	Blackburn, J., Phillips, A., Jakubovic, A., and Fibiger, H. (1989). Dopami Behavioral Neuroscience 103(1), 15-23. Borod, 1.C., Koff, E., Perlman-Lorch, M., and Nicholas, M. (1986). The epatients. Neuropsychologia 24(2), 169-180. Borod, J.C., Koff, E., Perlman-Lorch, M., and Nicholas, M. (1985). Chandamage. Arch. Neurology 42, 345-348. Botvinick M, Nystrom LE, Fissell K, Carter CS, Cohen JD. Conflict monit Nature. 1999 Nov 11; 402(6758): 179-81. Boxerman, J.L., Bandettini, P.A., Kwong, K.K., Baker, J.R., Davis, T.L., I contribution to fMRI signal change: Monte Carlo modeling and diffusion-Boynton et al., Linear sysems analysis of functional magnetic resonance 1996, 16(13): 4207-4221. Bozarth MA, Wise RA. Involvement of the ventral tegmental dopamine sizes Monogr. 1986;67:190-6. Braver, T.S., Cohen, J.D., Nystrom, L.E., Jonides, J., Smith, E.E., and N involvement in human working memory. Neuroimage 5(1), 49-62. Breiter HC, BecelTa L, Gonzalez RO, Huffman, EK, Harter K, lenkins L, human brain. (submitted to Neuron). (unpublished) Breiter HC, EtcoffNL, Whalen PJ, Kennedy W A, Rauch SL, Buckner RL of the human amygdala during visual processing of facial expression. N. Breiter, H.C., and Rosen, B.R. (1999). Functional magnetic resonance in 877, 523-547. Breiter, H.C., Rauch, S.L., Kwong, K.K., Baker, I.R., Weisskoff, R.M., Ke Stern, C.E., Belliveau, I. W., Baer, L., O'Sullivan, R.L., Savage, C.R., ler resonance imaging of symptom provocation in obsessive-compulsive did Brock, J.W., Ng, J.P., and Justice, J.B. Jr. (1990). Effect of chronic coca determined by microdialysis perfusion with NSD1015. Neurosci. Lett. 11 Buckner, R.L., Petersen SoB., Ojemann, J.C., Miezin, F.M., Squire, L.R., explicit and implicit memory retrieval (aSks. I. Neurosci. 15, 12-29. Bushnell MC, Duncan GH, Hofuauer RK, Ha B, Chen JJ, CalTier B. Pair Proc Natl Acad Sci U S A. 1999 Jul6;96(14):7705-9. Cabanac, M. (1971). Physiological role of pleasure. Science 173(2), 110 Cabib S, Puglisi-Allegra S. Opposite responses ofmesolimbic dopami	Borod, 1.C., Koff, E., Perlman-Lorch, M., and Nicholas, M. (1986). The expression and perception of facia patients. Neuropsychologia 24(2), 169-180. Borod, J.C., Koff, E., Perlman-Lorch, M., and Nicholas, M. (1985). Channels of emotional expression in p damage. Arch. Neurology 42, 345-348. Botvinick M, Nystrom LE, Fissell K, Carter CS, Cohen JD. Conflict monitoring versus selection- for-action Nature. 1999 Nov 11;402(6758): 179-81. Boxerman, J.L., Bandettini, P.A., Kwong, K.K., Baker, J.R., Davis, T.L., Rosen, B.R., and Weisskoff, R.M. contribution to fMRI signal change: Monte Carlo modeling and diffusion-weighted studies in vivo. Magn. F Boyriton et al., Linear sysems analysis of functional magnetic resonance imaging in human V1, The journ 1996, 16(13): 4207-4221. Bozarth MA, Wise RA. Involvement of the ventral tegmental dopamine system in opioid and psychomotor Res Monogr. 1986;67:190-6. Braver, T.S., Cohen, J.D., Nystrom, L.E., Jonides, J., Smith, E.E., and Noll, D.C. (1997). A parametric stu involvement in human working memory. Neuroimage 5(1), 49-62. Breiter HC, BecelTa L, Gonzalez RO, Huffman, EK, Harter K, lenkins L, Comite A, Borsook D. Morphine: human brain. (submitted to Neuron). (unpublished) Breiter HC, EtcoffNL, Whalen PJ, Kennedy W A, Rauch SL, Buckner RL, Strauss MM, Hyman SE, Roser of the human amygdala during visual processing of facial expression. Neuron. 1996 Nov;17(5):875-87. Breiter, H.C., and Rosen, B.R. (1999). Functional magnetic resonance imaging of brain reward circuitry in 877, 523-547. Breiter, H.C., Rauch, S.L., Kwong, K.K., Baker, I.R., Weisskoff, R.M., Kennedy, D.N., Kendrick, A.D., Davisem, C.E., Belliveau, I. W., Baer, L., O'Sullivan, R.L., Savage, C.R., lenkie, M.A., and Rosen, B.R. (1995). Functional magnetic memory retrieval (aSks. I. Neurosci. Lett. 117, 234-239. Buckner, R.L., Petersen SoB., Ojemann, J.C., Niezin, F.M., Squire, L.R., and Raichle, M.E., (1995). Functional magnetic memory retrieval (aSks. I. Neurosci. 15, 12-29. Bushnell MC, Duncan GH, Hofuauer RK,

U.S. DETERMENT OF CUMINAL PATENT AND TRADEMARK OFFICE

INFORMATION DISCLOSURE CITATION G 0 6

2004 Form PTO-1449 ATTY, DO APPLICATION NO. (Rev. 8-83) MGH-004AUS 09/729,665 APPLICANT (Use several sheets if necessing NOLOGY CENTER B3)

OTHER DOCUMENTS (including Author, Cale, Date, Pertinent Pages, Etc.) Hans C. Breiter et al. **GROUP December 4, 2000** 2862 CalTive P. The periaqueductal gray and defensive behavior: functional representation and neuronal organization. Behav Brain Res. 1993 Dec 20;58(1-2):27-47. Calder, A.J., Young, A.W., Rowland, D., PelTett, D.I., Hodges, J.R., and Etcoff, N.L. (1996). Facial emotion recognition after bilateral amygdala damage: differentially severe impainnent of fear. Cognitive Neuropsychology 13, 699-745. Carelli, R.M., Ijarnes, S.G., and Crumling, A.J. (Evidence that separate neural circuits in the nucleus accumbnes encode cocaine versus .natural" (water and food) reward. J. Neurosci. 20(11): 4255-4266...June 2000. Carr DB, Sesack SR. Projections from the rat prefrontal cot1ex to the ventral tegmental area: target specificity in the synaptic associations with mesoaccumbens and mesocortical neurons. J Neurosci. 2000 May 15;20(10): 3864-73. * Carrive P. The periaqueductal gray and defensive behavior: functional representation and neuronalorganization. Behav Brain Res. 1993 Dec 20:58(1-2):27-47. Carstens, E., Ste1zer, B., and Zilrunermann, M. (1988). Microinjections of glutamate or morphine at coincident midbrain sites have different effects on nociceptive dorsal horn neurons in the rat. Neurosci Lett. 95(1-3), 185-191. Casey KL, Minoshima S, Berger KL, Koeppe RA, Morrow TJ, Frey KA. Positron emission tomographic analysis of cerebral structures activated specifically by repetitive noxious heat stimuli. J Neurophysiol. 1994 Feb;71(2):802-7 Casey KL, Minoshima S, MolTOW TI, Koeppe RA. Comparison of human cerebral activation pattern during cutaneous warmth, heat pain, and deep cold pain. J Neurophysiol. 1996 Jul;76(1):571-81. Casey KL. Forebrain mechanisms of nociception and pain: analysis through imaging. Proc Natl Acad Sci U S A. 1999 Jul6;96(14):7668-74. Chance, W.T., Foli-Nelson, T., Nelson, J.L., and Fischer. J.E. (1987). Neurotransmitter alterations associated with feeding and satiety. Brain Research 416, 228-234. Chapman CR, Gavrin J. Suffering: the contributions of persistent pain. Lancet. 1999 Jun 26;353(917)):2233-7. Chiou, L.C., and Huang, L. Y. (1999). Mechanism underlying increased neuronal activity in the rat ventrolateral periaqueductal grey by a μ-opioid. J. Physiol. (Land). 518 (Pt 2), 551-559. Chudler EH. Response properties of neurons in the caudate-putamen and globus pallidus to noxious and non-noxious thermal stimulation in anesthetized rats. Brain Res. 1998 Nov 23;8 t 2(1-2);283-8. Chudler, E.H., Sugiyama, K., Dong, W.K., Nociceptive responses in the neostriatum and globus pallidus of the anesthetized rat, Journal of Neurophysiology, Vol. 69, No. 6, June 1993, 1890-1903. * Church, R.M. (1984). Properties of the internal clock. In Timing and Time Perception. Gibbon, J., Allan, L. (eds.), New York: New York Academy of Sciences, 566-582. Clarke PB, Franklin KB. Infusions of 6-hydroxydopamine into the nucleus accumbens abolish the analgesic effect of amphetamine but not of morphine in the formalin test. Brain Res. 1992 May 15;580(1-2): 106-10. Cody, F.W. and Richardson, H.C> (1977) Trigeminal projections to the cerebellar cortes in the cat. Proc. IEEE Physiologicl Soc. 1977 41P. Coghill, R.C., Talbot, J.D., Evans, A.C., Meyer, E., Gjedde, A., Bushnell, M.C., and Duncan, G.H. (1994). Distributed processing of pain and vibration by the human brain. J. Neurosci. 14.4095-4108. * Coghill. R.C.. Sang. C.N.. Maisog. J.M., and ladarola, MJ. (1999). Pain intensity processing within the human brain; a bilateral, distributed

Cohen SR, Melzack R. The habenula and pain: repeated electrical stimulation produces prolonged analgesia but lesions have no effect

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in

mechanism. I. Neurophysiol. 82(4). 1934-1943.

Examiner

on fonnalin pain or morphine analgesia. Behav Brain Res. 1993 Apr 30;54(2): 171-8.

conformance and considered. Include copy of this form with next communication to applicant,

Date Considered:

U.S. DEF. NOTMENT OF COMMERCE PATENT AND TRADEMAR PEICE
INFORMATION DISCLOSURE CITATION AUG 0 6 2004 Form PTO-1449 ATTY. DOCKET NO. APPLICATION NO. (Rev. 8-83) MGH-004AUS 09/729,665 APPLICANT sheets if necessary)

Sheets if necessary)

Hans C. Breite

FILING DATE

December 4, 20

OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, Etc.) Hans C. Breiter et al. **GROUP** December 4, 2000 2862 at postsynaptic sites in periaqueductal gray neurons. J. Comp. Neurol. 408(4),549-559. * administration. Pharm. Bioch. and Behavioral. 30, 443-450. * * Nature 372, 770-773. responses: A functional magnetic resonance irraging study. J Neurosci. 2000 Apr 15;20(8):3033-40. of working memory. Nature 378(6554), 279-281.

Cohen, M.S., Kosslyn, S.M., Breiter, H.C., DiGirolamo, GJ., Thompson, W.L., Anderson, A.K., Bookheimer, S. Y., Rosen, B.R. Belliveau, J. W. (1996). Changes in cortical activity during mental rotation: A mapping srudy using functional MRI. Brain 119, 89-100. Commons, K.G., van Bockstaele, E.I., and Pfaff, D. W. (1999). Frequent colocalization of mu opioid and NMDA-type glutamate receptors Corrigal, W.A.. and Vaccarino, F.J. (1988). Anatagonist treatment in the nucleus accumbens or periaqueductal grey affects heroin self-Craig AD, Chen K, Bandy D, Reiman EM. Thermosensory activation of insular cortex. Nat Neurosci. 2000 Feb;3(2): 184-90. Craig, A.D., Bushnell, M.C., Zhang, E.T., and Blomqvlst, A. (1994). A thalamic nucleus specific for pain and temperature sensation. Craig, A.D., Reiman, E.M., Evans, A., and Bushnell, M.C. (1996). Functional imaging of an illusion of pain. Nature 384, 258-260. Critchley HD, Elliott R, Mathias CJ, Dolan RJ. Neural activity relating to generation and representation of galvanic skin conductance D'Esposito, M., Detre, J.A., Alsop, D.C., Shin, R.K., Atlas, S., and Grossman, M. (1995). The neural basis of the central executive system Daghero, A.M., Bradley, E.L. Jr, and Kissin, I. (1987). Midazolam antagonizes the analgesic effect of morphine in rats. Anesth. Analg. 66(10), 944-947. Dale, A.M. (1999). Optimal experimental design for event-related fMRI. Human Brain Mapp. 8(2-3), 109-114. Dalton JA, Feuerstein M, Carlson J, Roglunan K. Biobehavioral pain profile: development and psychometric properties. Pain. 1994 Apr; 57(1):95-107. Damasio, A.R., Individuals with sociopathic behavior caued by frontal damage fail to respond autonomically to social stimuli, Behavioural Brain Research, 41 (1990), 81-94. David, A., Blamire, A., & Breiter, H.C. (1994). Functional magnetic resonance imaging. Brit. J. Psychiatry 164, 2-7. Davidson, R.J., & Sutton, S.K. (1995). Affective neuroscience: The emergence of a discipline. Current Opin. Neurobiology 5, 217 -224. Davidson, R.J. (1998). Affective style and affective disorders: Perspectives from affective neuroscience. Cognition and Emotion 12, 307-330. Davidson, R.J., and Fox, N.A. (1982). Asymmetrical brain activity discriminates between positive and negative affective stimuli in human infants. Science 218, 1235-1236. Davidson, R.J., and Fox, N.A. (1988). Frontal brain asymmetrical predicts infants' response to maternal separation. Journal of Abnormal Psychology, Vol. 98, No. 2, 127-131. Davidson, R.J., Ekman, P., Saron, C.D., Senulis, J.A., and Friesen, W.V. (1990). Approach-withdrawal and cerebral asymmetry: Emotional expression and brain physiology I. J. Personality and Social Psych. 58(2), 330-341. Davis KD, Kiss ZH, Tasker RR, Dostrovsky JO. Thalamic stimulation-evoked sensations in chronic pain patients and in nonpain (movement disorder) patients. J Neurophysiol. 1996 Mar;75(3): 1026-37. Davis KD, Kwan CL, Crawley AP, Mikulis DJ. Event-related fMRI of pain: entering a new era in imaging pain. Neuroreport. 1998 Sep 14;9(13):3019-23.

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Date

FORM PTU-1449

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMA POPEFICE

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APPLICATION NO. **09/729,665**

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Hans C. Breiter et al.

FILING DATE

December 4, 2000

GROUP **2862**

U.S. PATENT DOCUMENTS

				U.S. 1	PATENT DO	CUMENTS						
EXAMINER INITIAL		DO	OCUMENT NUM		DATE	NAME	CLAS	S SUBCLASS	FILING DATE IF APPROPRIATE			
			OTHER	DOCUMENTS (including Autho	r, Title, Date, Pertinen	t Pages, Etc.)					
	*	Davis KD, Kw and tactile sti	van CL, Crawley imuli. J Neuroph	y AP, Mikulis Dl. f nysiol. 1998 Sep;	Functional MRI 80 (3): 1533-46	study of thalamic and	d cortical activat	ons evoked by cut	aneous heat, cold,			
-	*			L., Tasker, R.R., 1(6665), 385-387		and Dostrovsky, J.O.	(1998b). Phanto	m sensations gene	erated by thalamic			
-	*	Decavel, C., a	and Van den Po	ol, A.N. (1990). G	SABA: a domina	ınt neurotransmitter i	n the hypothalar	nus. J. Comp. Neu	rol. 302, 1019-1037			
	*	positron emission	tomoraphy. Pain 76									
	*	Derbyshire SW, Jones AK, Oyulai F, Clark S, Townsend D, Firestone LL. Pain processing during three levels of noxious stimulation produces differential patterns of central activity. Pain. 1997 Dec;73(3):431-45.										
	*	Devinsky 0, Morrell MJ, Vogt BA. Contributions of anterior cingulate cortex to behaviour. Brain. 1995 Feb118 (Pt 1):279-306.										
	*	DiChiara, G. and Imperato, A. (1988). Drugs abused by humans preferentially increase synaptic dopamine concentrations in the mesolimbic system of freely moving rats. Proceedings of the National Academy of Sciences 85, 5274-5278.										
	*	Dill. R.E., and Costa. E. (1977). Behavioural dissociation of the enkephalinergic systems of nucleus accumbens and nucleus caudatus. Neuraphannacology 16(5).323-326.										
	*	Drevets, W.C., Videen, T.O., Price, J.L., Preskom, S.H., Carmichael, T., & Raichle, M.E. (1992). A functional anatomical study of unipolar depression. J. Neurosci. 12, 3628-3641.										
	*	Edmjnster, W.B., Talvage, T.M., Ledden, P.I., and Weisskoff, R.M. (1999). Improved auditory cortex imaging using clustered volume acquisitions. Hum. Brain Map 7(2), 89- 97.										
	*	Ekman, P., Sorenson, E.R., and Friesen, W.V. (1969). Pan-cultural elements in facial displays of emotion. Science 164, 86-88.										
	*	Etcoff, N.L. (1984). Selective attention to facial identity and facial emotion. Neuropsychologia 22(3), 281-295.										
	*	Everitt, B.J. (1997). Craving cocaine cues: cognitive neuroscience meets drug addiction research. Trends in Cognitive Sciences 1(1), 1-2.										
	*	Everitt, B.J., Moms, K.A., O'Brien, A., and Robbins, T.W. (1991). The basolateral amygdala-ventral striatal system and conditioned place preference: further evidence of limbic-striatal interactions underlying reward-related processes. J. Neurosci. 42, 1-18.										
	*	Fields HL, Hei	inricher MM, Ma	ason P. Neurotrar	nsmitters in noc	iceptive modulatory	circuits. Arll1u F	ev Neurosci. 1991	;14:219-45.			
	*	Fields HL, Mai 1995 Oct;74(4		R. Dorsal horn p	rojection target	s of ON and OFF cell	s in the rostral v	entromedial medu	lla. JNeurophysiol.			
	*			D.A., Schwarz, of verbal informat		.E., and Petersen, Se i. 16(2),808-822.	oB. (1996). A po	sitron emission to	mography study of			
	*			ll, R.B., and Dale app. 8(4), 272-28		High-resolution inters	subject averagin	g and a coordinate	system for the			
	*	Franklin, KB. A 59 (4):993-100		Abuse Potential:	an accidental a	ssociation or a comm	non substrate? I	Pharmacol Biocher	n Behav. 1998 Apr			
-	* Franklin, KB. Analgesia and the neural substrate of reward. Neurosci Biobehav Rev. 1989 Sununer-Fall; 13(2-3): 149											
		Date			Examiner							

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ATTY. DOCKET NO. MGH-004AUS

APPLICATION NO. 09/729,665

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APPLICANT

Hans C. Breiter et al.

FILING DATE **December 4, 2000**

GROUP 2862

							U.S. 1	PATENT DO	CU	MENTS					
EXAMINER INITIAL			D	OCUMEN				DATE		NAME		CLASS	SUBCLAS	s	FILING DATE II APPROPRIATE
				C	OTHER	DOC	J MENTS (including Auth	or, Tü	tle, Date, Pertinent	Pages,	Etc.)			
	*			lolmes Af . 1995 Ma				, Williams SC,	Frack	kowiak RS, Turne	er R. An	alysis of fM	RI time-serie	s rev	risited.
	*	Fris	Friston, K.J., Holmes, A.P., Worskey, K.I. (1999). How many subjects constitute a study? Neurolmage 10, 1-5.												
	*		Gaffan, D., and Harrison, S. (Aug.1987). Amygdalectomy and disconnection in visual learning for auditory secondary reinforcement by monkeys. J. Neurosci. 7, 2285-2292.												
	*		Gaffan, E.A., Gaffan, D and Harrison, S. (1988). Disconnection of the amygdala from visual association cortex impairs visual reward-association learning in monkeys. J. Neurosci. 8, 3144-3150.												
	*	Gallagher, M., & Chiba, A.A. (1996). The amygdala and emotion. Current Opin. Neurobiology 6, 221-227.													
,	*			l., & Holla pp 11771			1994). Th	e amygdala co	mple	x: multiple roles in	n assoc	iative learn	ing an attenti	on. F	Proc. Natl. Acad.
	*	Gad	Gao DM, Jeaugey L, Pollak P, Benabid AL. Intensity-dependent nociceptive responses from presumed dopaminergic neurons of the substantia nigra, pars compacta in the rat and their modification by lateral habenula inputs. Brain Res. 1990 Oct 8;529(1-2):315-9.												
	*		ar, R.W., 5-7181.	Aley, K.O)., and l	Levine,	J.D. (199	9). Pain-induce	d an	algesia mediated	by mes	olimbic rev	vard circuits.	Neu	rosci. 19(16),
	*	Gebhart, G.F., Sandkuhler, J., Thalhammer, J.a., and Zimmermann M. (1984). Inhibition in spinal cord of nociceptive information by electrical stimulation and morphine microinjection at identical sites in midbrain of the cat. J Neurophysiol. 51(1), 75-89.													
	*							witz, B., Hersco atry 152.341-3		. P., and Post. R.	M. (199	5). Brain a	ctivity during	trans	sient sadness and
	*		oon, I., R . 95, 102		ch, S. F	airhurs	st, and Kad	ælnik, A. (1988). Sc	alar expectancy t	heory a	nd choice l	oetween dela	yed i	rewards. Psychol.
	*	Glic	kman SE	, Schiff B	B. A bi	ologica	il theory of	reinforcement	. Psy	chol Rev. 1967 M	far;74(2):81-109.			
	*	Golay X, Kollias S, Stoll G, Meier D, Valavanis A, Boesiger P. A new correlation-based fuzzy logic clustering algorithm for fMRI. Magn Reson Med. 1998 Aug;40(2):249-60.													
	*	Fole	Gollub, R.L., Breiter, H.C., Kantor, H., Kennedy, D., Gastfriend, D., Mathew, R.T., Makris, N., Guimaraes, A., Riorden, J., Campbell, T., Foley, M., Hyman, S.E., Rosen, B., and Weisskoff, R. (1998). Cocaine decreases cortical cerebral blood flow but does not obscure regional activation in functional magnetic resonance imaging in human subjects. J. Cereb. Blood Flow Metab. 18(7), 724-734.												
	*		cely RH, ;35(3):27		OM. The	e Desc	riptor Diffe	rential Scale: a	pplyi	ng psychophysic	al princ	iples to clir	ical pain asse	essn	nent. Pain. 1988
	*	Guir (199	maraes, A 98). Imagi	A.R., Melo ing subco	cher, J.I ortical a	R., Tal uditory	avage, T.M activity in	/I., Baker, J.R., humans. Hum	Ledo Brain	den, P., Rosen, B n Mapp. 6(1):33-4	I.R., Kia 41.	ng, N.Y., F	ullerton, B.C.	, and	d Weisskoff, R.M.
	*			Genero, pp 269-27		ce, L., I	Feinberg,	M., Levine, S.,	"Faci	al Electromyogra	iphy in l	Depression	, Arch. Gen. I	⊃syc	hiatry, Vol. 43,
	*						vil, A.S., H , 241-251,		aem	er, H.C., Facial e	motion	discriminat	ion: II. Behav	ioral	findings in
	*							and Fields, H.I). 1777-1781.	(Ju	ne 1998). Mu and	d kappa	opioid rec	eptors in peri	aque	eductal gray and
	_	D	ate					Examiner							

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADED TRAVELOFICE (Rev. 8 INFORMATION DISCLOSURE CITATATING 0 6 2004 (Use several sheets if necessary) HNOLOGY CENTER R3700 PATE TRADEME

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Hans C. Breiter et al.

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		U.S. I	PATENT DO	DCUMENTS							
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE*				
	T *	OTHER DOCUMENTS (including Autho	or, Title, Date, Pertinent Pa	ges, Etc.)						
	*	Gysling, K., Wang, R.Y. (1983). Morphine-ind	uced activation	of A10 dopamine neuron	s in the rat. Bra	ain Res. 277(1),	119-27.				
	*	Haber SN, Fudge JL. The primate substantia	nigra and VT A	: integrative circuitry and	function. Crit R	ev Neurobiol. 19	97;11(4):323-42.				
	*	Hakan, R.L., and Henriksen, (Oct. 1989). Opia dopamine mechanisms. Journal of Neurosci. 9	ate influences of 9 (10),3538-35	on nucleus accumbens ne 46.	euronal electrop	hysiology: dopa	mine and non-				
	*	Hakan, R.L., and Henriksen, S.I. (1987). Syst neurons in vivo. Neuroscience Lett. 83, 307-3		administration has heterog	geneous effects	on activity reco	rded from nucleus				
	*	Hamann, S.B., Stefanacci, L., Squire, L.R., Ad Nature 379, 497.	olphs, R., Tran	el, D., Damasio, H., & Da	masio. A. (199	6). Recognizing	facial emotion.				
	*	Hatfield, T., Ran, IS., Conley, M., Gallagher, amygdala interfere with pavlovian second-order									
	*	Haxby, J.V., Horwitz, B., Ungerleider, L.G., Ma extratriate cortex: a PET-rCBF study of selection	isog, J.M., Piet ve attention to	trini, P., and Grady, C.L. (faces and locations. J. Ne	Nov. 1994). Th eurosci. 14 (11)	e functional orga , 6336-6353.	anization of human				
	*	Heffner, T., Hartman, J., and Seidan, L. (1980). Feeding increases dopamine metabolism in the rat brain. Science 208, 1168-1170.									
	* Heilman, K.M., Bowers, D., Speedie,L., & Coslett, H.B. (April 1983). The comprehension of emotional and nonemotional pro Neurobiology 33(2), 241.										
	*	Heimar, L., Harlan, R.E., Alheid, G.F., Garcia, anatomical correlations in neuropsychiatric dis			ia innominata:	a notion which in	mpedes clinical-				
	*	Heimer, L., Alheid, G.F., de Olmos, J.S., Groer beyond the core-shell dichotomy. J. Neuropsyc			., Zahm, D.S. (Summer1997). 1	The accumbens:				
·	*	Heinricher MM, Cheng ZF, Fields HL. Evidence 1987 Jan;7(1):271-8.	e for two classe	es of nociceptive modulat	ing neurons in	the periaqueduc	tal gray. J Neurosc				
- - .	*	Henriques, J.B., & Davidson, R.J. (1991). Left frontal hypoactivation in depression. J. Abnorm. Psych. 100(4), 535-545.									
,	*	Henriques, J.B., & Davidson, R.J. (1990). Regional brain electrical asymmetries discriminate between previously depressed and healthy control subjects. J. Abnorm. Psych. 99(1), 22-31.									
	*	Hernandez, L., and Hoebel, B. (1988). Food re measured by microdialysis. Life Sci. 42, 1705-		ine increase extracellular	dopamine in the	ne nucleus accu	mbens as				
	*	Hollerman, J.R., and Schultz, W. (August 1998 Nat Neurosci. 1(4), 304-309.). Dopamine n	eurons report an error in	the temporal pr	ediction of rewa	rd during learning.				
	*	Honey CR, Stoessl AJ, Tsui JK, Schulzer M, Ci 91 (2): 198-201.	alne DB. Unilat	eral pallidotomy for redu	ction of parkins	onian pain. J Ne	eurosurg. 1999 Aug				
	*	Hutchison WD, Davis KD, Lozano AM, Tasker 1999 May;2(5):403-5.	RR, Dostrovsk	y JO. Pain-related neuror	ns in the humar	n cingulate cone	x. Nat Neurosci.				
	*	ladarola MI, Berman KF, Zeffiro TA, Byas-Smitl pain and allodynia assessed with PET. Brain. 1			J. Neural activa	tion during acute	e capsaicin-evoked				
	*	Ingvar M. Pain and functional imaging. Philos Trans R Soc Lond B Bioi Sci. 1999 Jul 29;354: 1347-58.									
		Date	Examiner								

U.S. DELECTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE Form PTO-1449 CINFORMATION DISCLOSURE CITATION ECEIVED (Use several sheets if necessary) TRADEMAN

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EXAMINER INITIAL		DOCUMENT NUMBER	DATE	<u> </u>	NAME	CLASS	SUBCLASS	FILING DATE II APPROPRIATE	
		OTHER DOCUMENTS (I	ncluding Autho	or, Title, Dai	te, Pertinent Pages	, Etc.)			
	*	Irwin, W., Davidson, R.J., Lowe, M, Mock, B.J. echo-planar functional magnetic resonanace is	., Sorenson, J. maging. Neuro	A., & Tursk Report 7(1	i, P.A. (July 1996 1), 1765-1769.). Human am	nygdala activatio	n detected with	
	*	Iversen, s. D., and Mishkin, M. (1970). Presen Exp. Brain Res. 11, 376-386.	ative interfere	nce in mon	keys following se	lective lesior	ns of the inferior	prefrontal convexit	
	*	Jaeger, J., Borod, J.C., & Peselow, E. (1986) F Affective Dis. 11,43-50.	acial expressi	on of positi	ve and negative	emotions in p	patients with uni	polar depression.	
	*	Jensen TS. Opioids in the brain: supraspinal m	nechanisms in	pain contro	ol. Acta Anaesthe	siol Scand. 1	1997 Jan;41(1 P	1 2): 123-32.	
	* Johnson, S. W., and North, R.A. (Feb. 1992). Opioids excite dopamine neurons by hyperalarization of local interneurans. J. Neurosci 12(2),483-488.								
	 Jones AK, Brown WD, Friston KJ, Qi L y, Frackowiak RS. Cortical and subcortical localization of response to pain in man using positron emission tomography. Proc R Soc Lond B Bioi Sci. 1991, Apr 22;244(1309):39-44. 								
	*	Jones, A.K., Qi, L. Y., Fujirawa, T., Luthra, S.k. 1991 a or b). In vivo distribution of opioid recep measured with positron emission tomography.	otors in man in	relation to	the cortical proje	m, V .J Itoh ctions of the	n, M., Fukuda, H medial and late	and Jones, T. (ral pain systems	
	*	Jones, B., and Mishkin, M. (1972). Limbic lesio	n and the prot	olem of stim	nulus-reinforceme	ent associatio	on. Expl. Neurol	36, 362-377.	
	*	Jonides, J., Smith, E.E., Koeppe, R.A., A wh, I revealed by PET. Nature 363, 623-625.	E., Minoshima,	S., & Minto	un, M.A. (June 17	7, 1993). Spa	itial working mei	mory in humans as	
	*	Kalivas PW, Nakamura M. Neural systems for	behavioral act	ivation and	reward. Current	Opin Neurob	iol. 1999 Apr 9(2): 223- 7.	
	*	Kalyuzhny AE, Arvidsson U, Wu W, Wessendo antinociceptive circuits: studies using immunoc	ytochemistry a	and retrogra	ade tract-tracing.	J Neurosci.	16(20), 6490-50	3.	
	*	Kang W, Wilson SP, Wilson MA. Changes in n overexpression in rat amygdala are naloxone-r	eversible and t	transient. A	nn NY Acad Sci.	1999 Jun 29	;877:751-5.		
	*	Kanwisher, N., McDermott, 1., & Chun, M.M. (J face perception. 1. Neurosci. 17 (11), 4302-43	11.						
	*	Kapur, N., Friston, K.]., Young, A., Frith, C.D., & for faces: A PET study. Cortex 31, 99-108.					·		
	*	Kern MK, Birn RM, Jaradeh S, Jesmanowicz A response to esophageal mucosal acid exposur	e and distentio	n. Gastroe	nterology. 1998 (Dec;115(6):1	353-62.		
	*	Killcross, S., Robbins, T.W., and Everitt, B.J. (J within amygdala. Nature 388, 377-380.						•	
	*	Kiyatkin, E., and Gratton, A. (1994). Electroch for food Brain Res. 652, 225-234.							
	*	Konishi S, Nakajima K, Uchida I, Kameyama M during cognitive set shifting. Nat Neurosci. 1990	8 May; 1(1):80	-4.			ation of inferior	orefrontal cortex	
	*	Koob G.F, Sanna PP, Bloom FE. Neuroscience	or addiction. I	Neuron. 19	98 Sep. 21(3):46	7-76.			
1	*	Koob, G.F., and Bloom, F.E. (Nov. 1988). Cellu					ŕ		
,	*	Kosslyn, S:M., Pascual-Leone, A., Felician. 0., (April 1999). The role of area 17 in visual image	ry: convergen	t evidence	from PET and rT	MS. Science	284(5411).167	·170.	
*	•	Kreek, M.J., and Koob, G.F. (1998). Drug deper Dependence 51,23-47.				·			
- 1	•	Krout KE, Jansen AS, Loewy AD. Periaqueduct 30;401(4):437-54	al gray matter	projection t	to the parabrachi	al nucleus in	rat. J Comp Ne	urol. 1998 Nov	
		Date	Examiner						

							Page 10 of 15
Form PTO-14 (Rev. 8-83)		U.S. DEPARTMENT OF COMM PATENT AND TRADEMARK O		MGH-004		APPLICAT 09/729,	
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		U.S. PAT	ENT DOCUMÉ	N9780	·		
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE*
		OTHER DOCUMENTS (include					
	*	Kwong, K.K., Belliveau, J. W., Chester. D.A., Gold Turner, R., Cheng, H.M Brady, T J., and Rosen, I sensory stimulation. Proc. Natl. Acad. Sci. 89, (Jun.	3.R. Dynamic magn e 1992) 5675-5679.	etic resonance im-	aging of human	brain activity	during primary
	*	Lai SH, Fang M. A novel local PCA-based method	for detecting activat	tion signals in fMR	I. Magn Reson	Imaging. 199	9 Jul;17(6):827-36.
	*	Lane, R.D., Reiman. E.M Ahern, G.L Schwartz, G and disgust. Amer. J. Psychiatry 154, 926-933.	.E., & Davidson, R.	J. (July 1997). Neu	roanatomical c	orrelates of h	appiness, sadness,
	*	LeDoux, J.E. (1993). Emotional memory: In search	of systems and syn	apses. Ann. N. Y.	Acad. Sci. 702	, 149-157.	
	*	Lee RS, Koob GF, Henriksen SJ. Electrophysiologi behavior in the awake, unrestrained rat. Brain Res.			neurons to nov	elty stimuli an	nd exploratory
	*	Lenz, F.A., Gracely, R.H., Romanoski, A.1., Hope, somatosensory thalamus can reproduce both the a 910-913.	E.J., Rowland, L.H.	and Dougherty, F	P.M. (1995). Stir eviously experi	mulation in the enced pain. N	e human lature Med. 1 (9),
	*	Leonard, C.M., Rolls, E.T., Wilson, F.A., & Baylis, C faces. Behav. Brain Res. 15, 159-176.					
	*	London, E.D., Cascella, N.G., Wong, D.F., Phillips, H.N. (June 1990). Cocaine-induced reduction of glu	ucose utilization in h	numan brain. Arch	. Gen. Psychiat	ry 47, 567-574	4.
	*	Lynd-Balta, B., and Haber, S.N. (1994). The organi (3) 625-640.	zation of midbrain p	rojections to the v	entral striatium	in the primate	e. Neuroscience 59,
	*	Maldonado, R., Saiardi, A., Valverde, O., Samad, T. lacking dopamine D2 receptors. Nature 388 (6642)	, 586-589.				
	*	Manning BH, Mayer DJ. The central nucleus of the test. J Neurosci. 1995 Dec;15(12):8199-213.					
	*	Manning BH. A lateralized deficit in morphine antine 15;18 (22):9453-70.					
	*	Mansour, A., Khachaturian, H., Lewis, M.E., Akil, H kappa opioid receptors in the forebrain and midbrai	n. J Neurosci. 7(8),	2445-2464.			
	*	Martin G., Nie Z, Siggins, G.R. (1997). μ-opioid rec neurons. J Neurosci. 17, 11-22.					
	*	Martin WJ, Coffin PO, Attias E, Balinsky M, Tsou K by intracerebral microinjections. Brain Res. 1999 M	ar 20;822(1- 2):23	7-42.			
	*	Martinot, J.L., Hardy, P., Feline, A., Huret. J.D., Ma: hypometabolism in the depressed state: A confirma	tion. Amer. J. Psyc	hiatry 147, 1313-1	317.		
	*	Mathews, R.T., and German, D.C. (1984). Electrophy morphine. Neuroscience 11 (3), 617-625.	physiological evider	nce for excitation of	of rat ventral tec		
	*	Matthes, H. W., Maldonado, R., Simonin, F., Valver Hanoune, J., Roques, B.P., and Kieffer BL. (1996). lacking the μ-opioid-receptor gene. Nature.383(660	Loss of morphine-i 3), 819-823.	nduced analgesia,	, reward effect	and withdrawa	al symptoms in mice
	*	Maximilian, V.A., Prohovník, I., and Risberg, I. (198 Stroke II (4), 342-347.	0). Cerebral hemod				
	*	McCarthy, G., Blamire, A.M., Puce, A., Nobre, A., B magnetic resonance imaging of human prefrontal c 8690-8694.	loch, G., Hyder, F., ortex activation dur	Goldman-Rakic, f ing a spatial worki	P., and Shulma ng memory tas	n, R.G. (1994) k. Proc Natl A). Functional cad Sci USA 91,
	*	McCullough, L., Cousins, M., and Salamone, J. (19 reinforcement operant schedule: a neurochemica)	93). The role of nuc and behavioral stud	cleus accumbens of	dopamine in res	sponding on a 46, 581-586.	continuous
	*	McFarland, D.J., and Sibly, R.M. (1975). The behave	vioral final common	path. Philos. Tran	s. R. Soc. Lond	d. B. Biol. Sci.	
	*	McLellan, A.T., Luborsky, L., and Woody, G.E. (198 addiction severity index. Journal of Nervous and Me	ental Disorders 168	, 27-33.			
<u></u>	*	Mellers, B.A., Schwartz, A., Ho, K., and Ritov, I. (19 Psychological Sciences 8(6), 423-429.	97). Decision affect	t theory: emotiona			
	*	Mesulam, MM. (1990). Large-scale neurocognitive Neurology 28, 597-613.					
	*	Michel, M.E., et al., Binding of a New Opiate Antago 7(4): 175-177	onist, Nalmefene, to	Rat Brain Memb	anes, Meth an	d Find Exptl C	lin Pharmacol 1985;

Examiner

Date

Form PTO-1449 (Rev. 8-83) AUG 0 3 2004 8 THE TRADPANE

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTY. DOCKET NO. MGH-004AUS

APPLICATION NO. 09/729,665

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APPLICANT Hans C. Breiter et al.

December 4, 2000

FILING DATE

GROUP 2862

U.S. PATENT DOCUMENTS

XAMINER			LING DATE II PPROPRIATE							
INITIAL		OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, Etc.)	TROTALL							
	*	Mirenowicz, J., and Schultz, W. (1994). Importance of unpredictability for reward responses in primate dopamine neurons.	J.							
	*	Neurophysiol, 72(2), 1024-1027.								
	*	Mirenowicz, J., and Schultz, W. (1996). Preferential activation of midbrain dopamine neurons by appetitive rather than aversive stimuli. Nature 379, 449-51.								
	*	Mitchell JM, Basbaum AI, Fields HL. A locus and mechanism of action for associative morphine tolerance. Nat Neurosci. 2 Jan;3(1):47-53.								
	Morgan MJ, Franklin KB. 6-Hydroxydopamine lesions of the ventral tegmentum abolish D-amphetamine and morphine analgesia formalin test but not in the tail flick 'est. Brain Res. 1990 Jun 11;519(1-2):144-9.									
	* Morris, J.S., Frith, C.D., Perrett, D.I., Rowland, D., Young, A.W., Calder, A.J., & Dolan, R.J. (1996). A differential neural response human amygdala to fearful and happy facial expression. Nature 383, 812-815.									
	*	Mouton LJ, VanderHorst VG, Holstege G. Large segmental differences in the spinal projections to the periaqueductal gray in the cat.								
	*	Ngan SC, Hu X. Analysis of functional magnetic resonance imaging data using self-organizing mapping with spatial connectivity. Magn Reson Med. 1999 May;41(5):939-46.								
	*	Nowycky, M.C., Waiters, J.R., and Roth, R.H. (1978). Dopaminergic neurans: effect of acute and chronic morphine administration on single cell activity and transmitter metabolism. J. Neural Trans. 42, 99-116.								
	*	O'Donnell P, Grace AA. Dopaminergic reduction of excitability in nucleus accumbens neurons recorded in vitro.								
	*	Ogawa, S., Lee, T., Nayak, A., and Glynn, P. (1990), Oxygenation-sensitive contrast in magnetic resonance image of rodent brain at high								
:	*	Ogawa, S., Tank, D. W., Menon, R., Ellermann, J.M., Kim, S.G., Merkle, H., and Ugurbil., K. (1992). Intrinsic signal chang accompanying sensory stimulation: functional brain mapping using MRI. Proc. Natl. Acad. Sci. USA 89, 5951-5955.								
	*	Oldfield, R.C. (1971). The assessment and analysis of handedness: the Edinburgh inventory. Neuropsychologia 9, 97-113.								
	*	Orzi, F., Passarelli, F., La Riccia, M., Di Grezia, R., Pontieri, F.E. (1996). Intravenous morphine increases glucose utilization of the rat nucleus accumbens. Eur. J. Pharmacol. 302(1-3), 49-51.								
	*	Pardo, J. V., Pardo, P.J., & Raichle, M.E. (1993). Neural correlates of self-induced dysphoria. Amer. J. Psychiatry 150,713								
	*	Paulesu, E., Frith, C.D., and Frackowiak, R.S.J. (1993). The neural correlates of the verbal components of working memor 342-345.								
	*	Pay S, Barasi S. A study of the connections of nociceptive substantia nigra neurones. Pain. 1982 Jan;12(1):75-89.	human CNS							
	*	Peckys, D., and Landwehrmeyer, a.B. (1999). Expression of mu, kappa, and delta opioid receptor messenger RNA in the temperature of the principle of the princip								
	*	Peoples, L.L., and West, M.O. (1996). Phasic firing of single neurons in the rat nucleus accumbens correlated with the timing of introduced cocaine self-administration. J. Neurosci. 16(10), 3459-3473.								
	*	Pettit, H.O., Ettenberg, A., Bloom, F.E., and Koob, G.F. (1984). Destruction of dopamine in the nucleus accumbens select attenuates cocaine but not heroin self-administration in rats. Psychopharmacology (Berlin) 84(2), 167-173.								
	*	Petrides, M., Alivisatos, B., Meyer, E., and Evans, A.C. (1993). Functional activation of the human frontal cortex during the of verbal working memory tasks. Proc. Natl. Acad. Sci. USA 90, 878-882.	e performanc							
	*	Pfaffmann, C., Norgren, R., and Grill, H.J. (1977). Sensory affect and motivation. Ann. NY Acad. Sci. 290, 18-34.								
	*	Phillips, A., Atkinson, L., Blackburn, J., and Blaha, C. (1993). Increased extracellular dopamine in the nucleus accumbens elicited by a conditional stimulus for food: an electrochemical study. Can. J. Physiol. Pharmacol. 71, 387-393.								
,	*	Piepponen, T.P., Honkanen, A., Kivastik, T., Zharkovsky, A., Turtia, A., Mikkola, J.A., Ahtee, L. (1999). Involvement of opic receptors in opioid-induced acceleration of striatal and limbic dopaminergic transmission. Pharmacol. Biochem. Behav. 63	3(2), 245-52.							
	*	Porrino, L.J., Crane, A.M., and Goldman-Rakic, P.S. (1981). Direct and indirect pathways from the amygdala to the frontal monkeys. J. Comp. Neurol. 198, 121-136.								
	*	Price DD, Bush FM, Long S, Harkins SW. A comparison of pain measurement characteristics of mechanical visual analog numerical rating scales. Pain. 1994 Feb;56(2):217 -26.								
	*	Puce, A., Allison, T., Asgari, M., Gore, J.C., & McCarthy, G. (1996). Differential sensitivity of human visual cortex to faces, and textures: A functional magnetic resonance imaging study. J. Neurosci. 16, 5205-5215.								
	*	Puce, A., Allison, T., Gore, J.C., & McCarthy, G. (1995). Face-sensitive regions in human extrastriate cortex studied by fun								
	*	Radhakishun, F., van Rec, I., and Westerink, B. (1988). Scheduled eating increases dopamine release in the nucleus accidence food-deprived rats as assessed with on-line brain dialysis. Neurosci Lett 85, 351-356.	umbens of							
		Date Examiner								

Form PTO-1449 THE TRADEMA

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTY. DOCKET NO. MGH-004AUS

APPLICATION NO. 09/729,665

INFORMATION DISCLOSURE CITATION

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FILING DATE

APPLICANT

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TECHNOLOGY CENT U.S. PATENT DOCUMENTS

EXAMINER		DOCUMENT NUMBER DATE NAME CLASS SUBCLASS APPROPRIATE
INITIAL		DOCUMENT NUMBER DATE NAME CLASS SUBCLASS APPROPRIATE OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, Etc.)
	*	Rainville, P., Duncan, G.H., Price, D.D., Carrier, B., and Bushnell, M.C. (1997). Pain affect encoded in human anterior cingulate but no
	*	somatosensory cortex. Science 277 (5328), 968-971.
	*	Rasia-Filho AA, Londero RG, Achaval M. Functional activities of the amygdala: an overview. J Psychiatry Neurosci. 2000 Jan;25(1): 1-23.
·	*	Reese, T.G., Davis, T.L., and Weisskoff, R.M. (1995). Automated shimming at 1.5T using echo planar image frequency maps. J. Mag Reson. Imaging 5, 739-745.
	*	Reiman, E.M., Lane, R.D., Ahern, G.L., Schwartz, G.E., Davidson, R.J., Friston, K.J., Yun, LS., & Chen, K. (1997). Neuroanatomical correlates of externally and internally generated human emotion. Amer. J. Psychiatry 154, 918-925.
	*	Richardson, N., and Gratton, A. (1996). Behavior-relevant changes in nucleus accumbens dopamine transmission elicited by food reinforcement: an electrochemical study in rat. J. Neurosci. 16, 8160-8169.
	*	Robbins, T.W., and Everitt, BJ. (1996). Neurobehavioral mechanisms of reward and motivation. Currnt Opinion in Neurobiology 6, 22 236.
	*	Roberts, D.C., Koob, G.F., Klonoff, P., and Fibiger, H.C. (1980). Extinction and recovery of cocaine self-administration following 6-hydroxydopamine lesions of the nucleus accumbens. Pharmacol. Biochem. Behav. 12(5), 781-787.
	*	Robinson, T.E., & K.C. BelTidge. 1993. The neural basis of drug craving; an incentive- sensitization theory of addiction. Brain Research Rev. 18, 247-291.
	*	Rogers RD, Owen AM, Middleton HC, Williams EJ, Pickard JO, Sahakian BJ, Robbins TW. Choosing between small, likely rewards an large, unlikely rewards activates inferior and orbital prefrontal cortex. J Neurosci. 1999 Oct 15; 19(20):9029-38.
	*	Rompre, PP., and Shizgal, P. (1986). Electrophysiological characteristics of neurons in forebrain regions implicated in self-stimulation the medial forebrain bundle in the rat. Brain Res. 364, 338-349.
	*	Ross, E.D., & Mesulam, M.M. (1979). Dominant language functions of the right hemisphere?; Prosody and emotional gesturing. Arch.Neurology 36, 144-148.
	*	Ryding, E., Eriksson, M.B.E., Rosen, I., and Ingvar, D.H. (1985). Regional cerebral blood flow (rCBF) in man during perception of radia warmth and heat pain. Pain 22, 353-362.
	*	Saade NE, Atweh SF, Bahuth NB, Jabbur SJ. Augmentation of nociceptive reflexes and chronic deafferentation pain by chemical lesion of either dopaminergic terminals or midbrain dopaminergic neurons. Brain Res. 1997 Mar 14;751(1):1-12.
_	*	Sackeim, H.A., Prohovnik, I., Moeller, J.R., Brown, R.P., Apter, S., Prudic, J., Devanand, D.P., & Mukherjee, S. (1990). Regional cereb blood flow in mood disorders. Arch. Gen. Psychiatry 47, 60-70.
	*	Salamone, I.D., Cousins, M.S., and Snyder, B.I. (1997). Behavioral functions of nucleus accumbens dopamine empirical and conceptu problems with the anhedonia hypothesis. Neurosci. Biobehav. Rev. 21:341-59.
	*	Salamone, J., Cousins, M., McCullough, L., Carriero, D., and Berkowitz, R. (1994). Nucleus accumbens dopamine release increases during instrumental lever pressiing for food but not free food consumption. Pharmacol. Biochem. Behav. 49, 25-31.
	*	Sandyk R, Bamford CR, Iacono RP. Pain and sensory symptoms in Parkinson's disease. Int J Neurosci. 1988 Mar;39(1-2): 15-25.
	*	Schlaepfer, T.E., Strain, E.C., Greenberg, B.D., Preston, K.L., Lancaster, E., Bigelow, G.E., Barta, P.E., and Pearlson, G.D. (1998). Si of opioid action in the human brain: mu and kappa agonists' subjective and cerebral blood flow effects. Am. J. Psychiatry 155(4), 470-473.
	*	Schultz, W., Dayan, P., and Montague, P.R. (1997). A neural substrate of prediction and reward. Science 275, 1593-1599.
··· - -	*	Schultz et al. (1995). In Models of Information Processing in the Basal Ganglia, Houk, J.C., Davis, J.L., and Beiser, D.G. (eds.) rvnT Press, Cambridge, MA, 233-248.
	*	Schultz, W., Apicella, P., and Ljungborg, T. (1993). Responso:s of monkey dopamine neurons to reward and conditioned stimuli during successive steps of learning a delayed response task. I. Neuroscience 13(3), 900-913.
	*	Schultz, W., and Romo. R. (1990). Dopamine neurons of the monkey midbrain: contingencies of responses to stimuli eliciting immed behaviord! reactions. J. Neurophysiol. 63, 607-624.
	*	Schultz, W. (1986). Responses of midbrain dopamine neurons to behavioral trigger stimuli in the monkey. Journal of Neurophysiology 56, 1439-1461
	*	Schultz, W. (1997). Dopamine neurons and their role in reward mechanisms. Curr .Opin. Neurobiol. 7, 191-197.
	*	Schultz, W., Apicella, P., Scamati, E., and Ljungberg, T. (1992). Neuronal activity in monkey ventral striatum related (to the expectatio reward. I. Neurosci. 12, 4595-4610.
	*	Seidman, L.J., Breiter, H.C., Goodman, J.M., Goldstein, J.M., Woodruff, P. W.R., O'Craven, K., Savoy, R., Tsuang, M.T., & Rosen, B.I (1998). A functional magnetic resonance imaging study of auditory vigilance with low and high infonnation .processing demands. Neuropsychology 12, 505-518.
	*	Sell LA, Moms J, Beam I, Frackowiak RS, Friston KJ, Dolan RI. Activation of reward circuitry in human opiate addicts. Eur J Neurosci. 1999 Mar; 11(3): 1042-8.
		Date Examiner

Forin PTO-1449 (Rev. 8-83) AUG 0 3 2004 TRADEALE.

ATTY. DOCK NO. MGH-004AUS

APPLICATION NO. 09/729,665

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARKS OF ICE

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FILING DATE **December 4, 2000**

GROUP 2862

U.S. PATENT DOCUMENTS

		U.S. PATENT DOCUMENTS		1						
EXAMINER INITIAL		DOCUMENT NUMBER DATE NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE*					
		OTHER DOCUMENTS (including Author, Title, Date, Pertine								
	*	Sergent, J., Ohta, S., & MacDonald, B. (1992). Functional neuroanatomy of face and object processing. Brain 115, 15-36.								
	*	Serratrice O, Michel B. Pain in Parkinson's disease patients. Rev Rhum Engl Ed. 1999 Jun;66(6):331-8.								
	*	Neuroscience, Jan. 1, 1999, 19(1): 420-430.								
	*	Shizgal P. Neural basis of utility estimation. Current Opin Neurobiol. 1997 Apr;7(2): 198-208.							
 - · · ·	*	Shizgal, P., Schindler, D., and Rompre, PP. (1989). Forebrain neurons driven by rewarding stimulation of the medial forebrain bundle the rat: comparison of psychophysical and electrophysiological estimates of refractory periods. Brain Res. 499, 234-248. Sikes, R.W., and Vogt, B.A. (1992). Nociceptive neurons in area 24 of rabbit cingulate cortex. I Neurophysiol. 68(5): 1720-1732.								
	*									
	*	Silfverskiold, P.,& Risberg, J. (1989). Regional cerebral blood flow in depression and mania. Arch. Gen. Psychiatry 46, 253-259.								
	*	Spiegler, 8.J., Mishkjn, M. (1981). Evidence for the sequential participation of inferior temporal cortex and amygdala in the acquisition of stimulus-reward associations. Bchav. Brdin Res. 3, 303-317.								
	*	Spinoza, B. The Ethics -Part III: On the origin and nature of the emotions. In: The Ethics. Elwes, R.H.M. (Ed). 1883 Princeton Univ. Press, Princeton, New Jersey pp1-132.								
	*	Stein, E.A., Pankiewicz, J., Harsch, H.H., Cho, 1.K., Fuller, S.A., Hoffmann, R.G., Hawkins, M., Rao, S.M., Bandettini, P.A., and Bloom, A.S. (1998). Nicotine-induced limbic cortical activation in the human brain: a functional MRI study. Am. J. Psychiatry 155(8), 1009-1015.								
	*	Stern, C.E., and Passingham, R.E. (1996). The nucleus accumbens in monkeys (Macaca fascicularis): Il Emotion and motivation. Behaving Brain Res. 75, 179-193.								
-	*	Sutton, J.P., and Breiter, H.C. (1994). Neural scale invariance: an integrative model with implications for neuropathology. World Conference on Neural Networks, 4, 667-672.								
	*	Sutton, S.K., and Davidson, R.J. (1997). Prefrontal brain symmetry: a biological systems. Psychological Science 8(3), 204-210.	substrate of the beha	avioral approach	and inhibition					
	*	Svoboda, K.R., Adams, C.E., and Lupica, C.R. (1999). Opioid receptor subtype of hippocampal interneurons. J. Neurosci. 19(1), 85-95.								
	*	Talbot, I.D., Marrett, S., Evans, A.C., Meyer, E., Bushnell, M.C., and Duncan, G.F. cerebral cortex. Science 251,1355-1358.								
	*	Talairach, I., and Tournoux, P. (1988). Co-planar Stereotaxic Atlas of the Human Brain Thieme Medical Publishers, New York, 2 pgs.								
	*	Thut, G., Schultz, W., Roelcke, U., Nienhusmeier, M., Missimer, I., Maguire, R.P., and Leenders, K.L. (1997). Activation of the human brain by monetary reward. NeuroReport 8, 1225-1228.								
	*	Toile TR KaufmalU1 T, Siessmeier T, Lautenbacher S, Berthele A, Munz F, Zieglgansberger W, Willoch F, Schwaiger M, Conrad B, Bartenstein P. Region-specific encoding of sensory and affective components of pain in the human brain: a positron emission tomography correlation analysis. Ann Neurol. 1999 Jan;45(1):40-7.								
	*	Tootell RB, Hadjikhani N. Attention -brains at work! Nat Neurosci. 2000 Mar;3(3):206-208.								
	*	Tootell, R.B., Dale, A.M., Sereno, M.I., and Malach, R. (1996). New images from human visual cortex. Trends Neurosci. 19(11), 481-489.								
	*	Tootell, R.B.H., Reppas, J.B., Kwong, K.K., Ma1ach, R., Born, R.T Brady, TJ., Ro analysis of human MT and related visual cortical areas using magnetic resonance	e imaging. J. Neuro	sci. 15, 3215-32	30.					
	*	Treede RD, Meyer RA, Raja SN, Campbell IN. Evidence for two different heat tra innervating monkey skin. J Physiol (Lond), 1995 Mar 15;483 (Pt 3):747-58.	insduction mechanis	sms in nociceptiv	re primary afferent					
	*	Tremblay L, Schultz w. Relative reward preference in primate orbitofrontal cortex								
	*	Tseng, L.F. and Wang, Q. (1992). Forebrain sites differentially sensitive to β-end enkephalin in the pentobarbital- anesthesized rat. J. Pharmacol. Ex.p. Ther. 261((3), 1028-1036.							
-	*	Turken AU, Swick D. Response selection in the human anterior cingulate cortex.	Nat Neurosci. 1999							
	*	Urban MG, Zahn PK, Oebhart OF. Descending facilitatory influences from the ros hyperalgesia in the rat. Neuroscience. 1999 May;90(2):349-52.								
	*	Uytdenhoef, P., Portelange, P., Jacquy, J., Charles, G., Linowski, P., & Mendlewi lateralized hemispheric dysfunction in depression. Brit. J. Psychiatry 143, 128-13	2.							
	*	Vaccarino, F.I., Bloom, F.E., and Koob, G.F. (1985). Blockade of nucleus accumb reward in the rat. Psychopharmacology 86, 37 -42.	ens opiate receptor	s attenuates the	intravenous heroir					
		Date Examiner								

U.S. DEP MENT OF COMMERCE PATENT AND TRADEMARK OFFICE

INFORMATION DISCLOSURE CITATION

(Use several sheets if necessary)

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December 4, 2000

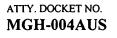
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EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE*					
			or, Title, Date, Pertinent Page								
*	Vogt, B.A., Wiley, R.a., and Jensen, E.L (1995). Localization of mu and delta opioid receptors to anterior cingulate afferents and projection neurons and input/output model of mu regulation. Exp. Neural. 135(2), 83-92.										
*	Volkow, N.D., Wang, G.J., Fischman, M. W., Foltin, R. W., Fowler, J.S., Aburnrad. N.N., Vitkun, \$., Logan, J., aatley, \$.1., Pappas, N., Hitzemann, R., and Shea, C.E. (1997). Relationship between subjective effects of cocaine and dopaminergic transporter occupancy. Nature 386, 827-830.										
*	within patches of the caudate-putamen nucleus. J. Comp. Neurol. 412(1), 132-146.										
*	Watanabe, M. (1996). Reward expectancy in primate prefrontal neurons. Nature 382, 629- 632.										
*	Watkins LR, Wiertelak EP, McGorry M, Martinez J, Schwartz B, Sisk D, Maier SF. Neurocircuitry of conditioned inhibition of analgesia: effects of amygdala, dorsal raphe, ventral medullary, and spinal cord lesions on antianalgesia in the rat. Behav Neurosci. 1998 Apr; 112(2):360-78.										
*	expressions modulate amygdala activity witho	Whalen, P J., Rauch, S.L., Etcoff, N .L., McInemey, S.C., Lee, M.B., and Jenike, M.A. (1998). Masked presentations of emotional facial expressions modulate amygdala activity without explicit knowledge. J. Neurosci. 18, 411-418.									
*	Wise RA. Addictive drugs and brain stimulation	on reward. Annu	u Rev Neurosci. 1996; 19:3	19-40.							
*	Brain Res. 115, 233-242.	Woodruff, G.N., McCarthy, P.S., and Walker, R.J. (1976). Studies on the pharmacology of neurons in the nucleus accumbens of the rabbain Res. 115, 233-242.									
*	Woods, R.P., Cherry, S.R., and MaZ2.iotta, J.C. (1992). Rapid automated algorithm for aligning and reslicing PET images. J. C Assist Tomogr. 16, 620-633.										
*	Wu MT, Hsieh JC, Xiong J, Yang CF, Pan HB, Chen YC, Tsai G, Rosen BR, Kwong KK. Central nervous pathway for acupuncture stimulation: localization of processing with functional MR imaging of the brain—preliminary experience. Radiology. 1999 Jul;212(1):133-41.										
*	Yaksh, T.L. (1997). Pharmacology and mecha	nisms of opioio	d analgesic activity. Acta. A	naesthesiol.	Scand. 41(1 Pt 2	2), 94-111.					
*	Yaari, A., Eisenberg, E., Adler, R., Chronic pa 1999, 1810-187.										
*	dopamine release in the nucleus accumbens tetters, 139 (192) 73-76. May 1992.	and ventral teg	mental area in the rat: mea	surement by	in vivo microdial	lysis, Neuroscience					
*	Yu. L.C., and Han, J.S. (1989). Involvement of periaqueductal grey subserving an antiinocice	ptive effect. Int	. J. Neurosci. 48(1-2), 71-7	'8 .							
*	Zubieta, IK., Dannals, R.F., and Frost, 1.1. (1 PET, Am. I. Psychiatry 156(6),842-848.	1999). Gender :	and age influences on hum	an brain mu-							
*	Zubieta, IK., Oorelick, D.A., Stauffer, R., Rav detected by PET in cocaine-dependent men is	vert, H.T., Dann s associated wi	als, R.F., and Frost, J.J. (th cocaine craving. Nat. Mo	1996). Increas ed. 2(II), 122	sed mu opiod re 5-1229.	ceptor binding					
	Date	Examiner				•					

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	*	5	6	5	9	0	4	1	8/19/97	Pollack et al.			
	*	5	8	5	8	3	2	7	1/12/99	Pollack et al.			•
	*	5	9	5	8	5	9	6	9/28/99	Renshaw et al.			
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